Chapter 18
Mobility, Data, and Behavior: The Traffic\textsuperscript{O\textsubscript{2}} Case Study

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ABSTRACT

This chapter presents the social innovation project “Traffic\textsuperscript{O\textsubscript{2}}”, a support system for decision-making in the field of transportation that tries to push commuters towards more sustainable mobility by providing concrete incentives for each responsible choice. After focusing on Palermo, Italy, the context of this case study, this chapter provides a detailed description of the Traffic\textsuperscript{O\textsubscript{2}} model. Specifically, the chapter deals with the analysis of a selected sample of users among Palermo University students who commute daily to their respective University departments on campus. Starting from the modal split of the actual situation (Status Quo scenario), another behavior scenario (Do your right mix) is designed and promoted to encourage users to create a better mix of existing mobility means and reduce the use of private vehicles powered by combustibles. The first test that was performed confirmed the reliability of the initiative.

INTRODUCTION

The development of urban sustainable design models in the field of transportation is becoming more connected to social sciences and ICT technologies (Patier & Browne, 2010). The main reason is given by the ability to rapidly understand the different motivations that lead people (Moore, 2011) and, therefore, the various social categories that define the urban community, to choose one urban transport system over another (Nasrudin & Nor, 2013). In fact, starting from this analysis it should be possible to develop solutions with the purpose of implementing and inducing more sustainable behavior regarding the use of urban transport. It is often argued that the choice of urban

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transport system depends on the circumstances and on current infrastructure; therefore, it is hard to develop convincing tests in the field without literally building different infrastructure (Urry, 2012). Also, habits are a key element for defining transport models, and this makes individual behavior changes very difficult to implement.

It is not only a question of top-down policies (Singapore Land Transport Authority, 2008), but it is also about bottom-up dynamics guided by citizens’ lifestyles, daily habits and the ways they perceive the city itself (Gatersleben et al., 2013).

According to the “Urban Metabolism” metaphor (Pincetl et al., 2012), in order to improve the “body’s” performance, we should operate upon the “nervous system”, i.e. on the people that too often ‘use’ the city improperly (Wamsler & Brink, 2014). Alongside the projects for retrofitting the urban systems (Luederitz et al., 2013) and the new urban transport policies (de Freitas Miranda & Rodrigues da Silva, 2012), research projects that tie “transport-values-communication-behaviors” are rapidly growing (Næss, 2013).

In this field, the possibility of using new media technologies to influence citizens’ urban transports habits (Gal-Tzur et al., 2014) is gaining attention. Smartphones or better information systems through personal mobile technologies, specifically, seem to be the most effective due to the real time one-to-one dialogue with citizens (Brazil & Caulfield, 2013). In fact, through these inexpensive devices it is already possible to implement applications similar to the ones researchers are developing to help civic administrators to manage traffic (González et al., 2013). Mainly, the companies working on this issue are “for profit” private enterprises which support the citizens that are increasingly becoming “consumers” of the services the city offers or “prosumers” of their community (Izvercianu et al., 2014).

However, other attempts have been made and guided by “non-profit” organizations and research centers which use similar instruments, such as Social Computing (Kwai Fun & Vagner, 2008), and aim to develop social innovation projects with the goal of improving the environment and energy policies (Souza Santos & Kahn Ribeiro, 2013). Nowadays, in fact, some proposals are being made to address the theme of urban mobility in an alternative way, through technology social innovation tools. The Italian Ministry of Education and Research is directly funding some of these projects through the 2012 tender “Smart Cities and Communities and Social Innovation”. This proves how relevant this policy is today, which links research, innovation and immediately usable tools to deal with issues concerning cities.

This chapter will discuss the description of urban mobility for the city of Palermo and the application context for these research programs. This will be followed by a detailed analysis of the “TrafficO2” project (developed by one of the authors) and the current timeline of the development process in its second year of implementation. The discussion will focus on the models used, on the first results and on the limitations of this approach. The perspectives for further experimentation will be discussed as well.

BACKGROUND

The Mobility System for the City of Palermo

Many researchers and designers are attempting to create “tailor-made” solutions for behavior-changing projects that are able to improve energy efficiency policies. Following this main research approach, the city of Palermo was chosen because of the interesting situation the city has been facing for the past few years.

Palermo is the fifth biggest city in Italy in terms of population (654,858 inhabitants in the urban area and 1.2 million in the metropolitan area); its population density is 4,270 inhabitants / km² in an area of 159 km². Palermo, like many other cities in Italy, faces severe traffic problems on a
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